IN THE CLAIMS

Please amend the claims as follows:

Claims 1-17 (Canceled).

Claim 18 (New): A variable-reluctance analog position transducer configured to determine a variation of position of a target, comprising:

a target made of a ferromagnetic material;

at least one magnet, the target and the magnet defining between one another an air gap;

a magnetosensitive element detecting a variation of induction caused in the air gap by displacement of the target relative to the magnet, wherein the magnet is magnetized along a direction substantially perpendicular to a front surface of the magnet bounding one edge of the air gap, the magnet having a cavity opening on the front surface of the magnet, the magnetosensitive element being seated in the cavity, the target having a geometric configuration such that the variation of induction as a function of the position of the target corresponds to a predefined function.

Claim 19 (New): A variable-reluctance analog position transducer according to claim 18, wherein the target is translationally mobile along an axis perpendicular to an axis of magnetization of the magnet.

Claim 20 (New): A variable-reluctance analog position transducer according to claim 18, wherein the target is translationally mobile along an axis parallel to an axis of magnetization of the magnet.

Claim 21 (New): A variable-reluctance analog position transducer according to claim 18, wherein the target is rotationally mobile around a shaft perpendicular to an axis of magnetization of the magnet.

Claim 22 (New): A variable-reluctance analog position transducer according to claim 18, wherein the target is rotationally mobile around a shaft parallel to an axis of magnetization of the magnet.

Claim 23 (New): A variable-reluctance analog position transducer according to claim 18, wherein a plane in which displacement of the target takes place is included in a plane passing through the center of the magnetosensitive element.

Claim 24 (New): A variable-reluctance analog position transducer according to claim 18, further comprising a ferromagnetic piece adhesively bonded to a back of the magnet.

Claim 25 (New): A variable-reluctance analog position transducer according to claim 24, wherein the magnet is adhesively bonded to a T-shaped ferromagnetic piece.

Claim 26 (New): A variable-reluctance analog position transducer target according to claim 18, wherein the target has a particular or optimized shape, configured to deliver a linear induction as a function of the displacement of the target.

Claim 27 (New): A variable-reluctance analog position transducer according to claim 18, wherein the magnetosensitive element is placed in the cavity in a zone of minimal induction.

Claim 28 (New): A variable-reluctance analog position transducer according to claim 21, wherein the target comprises at least one spiral tooth.

Claim 29 (New): An analog position transducer according to claim 28, wherein the target comprises three spiral teeth, each disposed at an angle of 120°.

Claim 30 (New): A variable-reluctance analog position transducer according to claim 28, wherein a maximum measurable angular travel is close to 360°.

Claim 31 (New): A variable-reluctance analog position transducer according to claim 19, wherein the target has a shape configured to generate a variation of thickness of the air gap that is a function of a position relative to the magnet.

Claim 32 (New): A variable-reluctance analog position transducer according to claim 20, wherein the magnet and the magnetosensitive element are disposed opposite a ferromagnetic membrane configured to be deformed under effect of a force applied vertically to a membrane.

Claim 33 (New): An angular position transducer for a camshaft or crankshaft, provided with an analog position sensor according to claim 21.

Claim 34 (New): A method for construction of a target for an analog position transducer according to claim 18, made of a ferromagnetic material, having a desired induction signal, the method comprising:

establishing a first geometric shape for the target;

positioning points on the target, the points having coordinates in a viewing plane of spatial coordinates;

calculating a magnetic induction signal as a function of linear or rotary displacement of the target, the displacement of the target being effected over a predefined trajectory;

modifying coordinates of one of the points and recalculating the induction as a function of the position of the target to determine influence of this point on the induction measured by the magnet;

determining a matrix and solving an equation configured to define a new geometric shape of the first shape determined previously for the target; and

repeating the calculating, modifying, and determining until a magnetic induction as a function of the linear or rotary displacement of the target is obtained satisfying in conformity with desired linearity criteria, or until a nonlinear function is obtained.